I-99 Advanced Transportation Technology Test Bed

Paul P. Jovanis Ph.D.
Professor and Department Head
Civil and Environmental Engineering
Penn State University

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Overview

- I-99 Test Bed Concept
- Signing and Illumination Testing Facility
- Winter Maintenance and Hazardous Materials Routing
- Ground and Surface Water Issues
- Summary

I-99 Test Bed Concept

- **Highway Proximate to Penn State**
- **Develop *In Situ* Laboratory for Testing Advanced Technologies**
- **Tie Infrastructure Monitoring to Management Center**
- **Comprehensive Program:**
  - **Bridges - Traffic**
  - **Pavements - Environment**

Signing and Illumination Facility

- Facilitate Testing of Advanced Signing Materials and Illumination Systems
- “Smart” Lighting that Responds to Ambient Conditions
- Enhance Mobility and Safety During Adverse Weather
- Significant Private Sector Interest
- Leader: Dr. Martin Pietrucha

Routing and Scheduling for Winter Maintenance

- Predicted Road Conditions
- Weather Forecast
- Complex Optimization Problem
  - Fixed Vehicle Capacity
  - Vehicle Positioning
  - Real-time Routing
- Leader: Dr. Elise Miller-Hooks

Hazardous Materials Routing

- Minimize Accident Risk and Environmental Impact
- Estimate Risk in Real-time and Generate Route
  - Road Geometry
  - Weather
  - Historical Crash Data
- Leader: Dr. Elise Miller-Hooks

Environmental Issues

- Long-term Ground Water Monitoring
- Proposed Modeling to Shorten Monitoring Mandate
- Stream Restoration, Mitigation
- Leaders: Dr. Art Miller, Dr. Peggy Johnson

Summary

- Enhanced Infrastructure Management Through Technology
- Extensive Roadway Sensors Planned
- Assess Atmospheric Instrumentation Needed for Advanced Weather Prediction in Rural Transportation Applications
- Seeking Partners